

REMARKS

By the present response, independent claim 31 has been amended and claim 32 has been canceled. Thus, claims 31 and 33-40 remain in the present application.

Reconsideration and allowance of remaining claims 31 and 33-40 in light of the above amendments and the following remarks are respectfully requested.

A. Rejections of Claims 31-32, 37, and 39-40 Under 35 USC § 102(e) and Claims 33-36 and 38 Under 35 USC § 103(a)

The Examiner has rejected claims 31-32, 37, and 39-40 under 35 USC §102(e) as being anticipated by US published application number 2003/0207582 to Twu et al. (hereinafter "Twu"). The Examiner has separately rejected claims 33-36 and 38 under 35 USC §103(a) as being unpatentable over Twu in view of US patent number 5,441,598 to Yu et al. (hereinafter "Yu"). Applicant respectfully submits that amended independent claim 31 of the present invention is patentably distinguishable over Twu, either singly or in any combination with Yu, for the reasons that follow.

The present invention, as defined by amended independent claim 31 is directed to, among other things, reducing dishing in metal features during CMP process. The present invention, as defined by amended independent claim 31 requires that, after passage of a first time period, the flow rate of the slurry during a second time period be reduced and in fact be stopped so that during the second time period only a polishing action, with no slurry flow, would occur. As such, amended independent claim 31 requires "reducing said dispensing of said slurry after said polishing for a first period of time, wherein said

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dispensing of said slurry is reduced to a stop" followed by "polishing said sample using said polishing pad for a second period of time to remove said excess interconnect material."

In contrast, Twu is directed to "saving on the amount of slurry that is being used for the copper surface polishing process" and reducing damage to copper lines by using a "low to high" slurry flow. See, for example, paragraph 52 of Twu. This is in contrast with the methods and the goals of the present invention. As stated in Twu, the polishing process of Twu is broken down into two distinct steps. The first step is a slow slurry flow, that is less than or equal to 200 cc/min. This polishing step is executed for a time approximately equal to 5 minutes and is determined by the thickness of the layer of copper that needs to be polished. This polishing process and the time of duration for this process assumes the use of standard copper slurry. The second step of the polishing process is a high slurry flow, that is more than or equal to 250 cc/min. This polishing step is executed for a time approximately equal to 1 to 2 minutes and is again determined by the thickness of the layer of copper that needs to be polished. This polishing process and the time of duration for this process also assumes the use of standard copper slurry. See, for example, paragraphs 42 through 44, and Figure 5a of Twu.

As stated above, the present invention, as defined by amended independent claim 31, requires just the opposite; for example that a high flow rate be reduced, and indeed be stopped - at which time only polishing is performed. As such, Applicant respectfully submits that the present invention as defined by amended independent claim 31 is

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patentably distinguishable over Twu, and thus claims 33-40 depending from amended independent claim 31 are also patentable over Twu or any combination of Twu and Yu for reasons similar to those discussed above and also for added limitations in those dependent claims.

B. Conclusion

For the foregoing reasons, Applicant respectfully submits that claim 31 its dependent claims 33-40 are patentable over the art of record and as such an early notice of allowance directed to claims 31 and 33-40 remaining in the present application is respectfully requested.

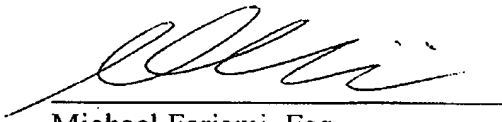
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Respectfully Submitted,
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